

## CLAIMS

1. A regenerator for a wavelength division multiplex transmission system, including a demultiplexer adapted to separate the signals of various channels, a plurality of optical modulators each adapted to receive signals from the demultiplexer and a modulation clock from a clock distribution unit, and a multiplexer adapted to combine the signals modulated by said modulators, in which regenerator the clock distribution unit includes a reference clock and, for each modulator, means for synchronizing the phase of a copy of the reference clock with the signals applied to the modulator.

2. The regenerator of claim 1, wherein the phase synchronization means include a phase-locked loop for each modulator.

3. The regenerator of claim 2, wherein the phase-locked loop includes a phase shifter receiving a copy of the reference clock and supplying a modulation clock and the phase shifter is controlled in accordance with the average power of the output signals of the modulator.

4. The regenerator of claim 3, wherein the phase-locked loop includes a coupler adapted to sample a portion of the output signals of the modulator and a photodiode adapted to receive the signals from the coupler and to supply a voltage representative of the average power of the output signals of the modulator.

5. The regenerator of claim 4, wherein the phase shifter is controlled by a signal in accordance with the difference between said voltage and a reference voltage.

6. The regenerator of claim 5, wherein the reference voltage depends on the total power of the signals at the output of the regenerator.

7. The regenerator of claim 5, wherein the reference voltage is remote-controlled.

8. The regenerator of claim 1, wherein the reference clock is supplied by a voltage-controlled oscillator.

5 9. The regenerator of claim 8, wherein the oscillator is controlled in accordance with the signals applied to the regenerator.

10 10. The regenerator of claim 8, including a coupler for sampling a portion of the input signals of the regenerator and a clock recovery circuit adapted to receive signals sampled by the coupler and to supply at its output a control signal for the oscillator.

11. A wavelength division multiplex transmission system including a regenerator according to claim 1.

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